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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,358	04/12/2004	Ali Shajii	56231-457 (MKS-143)	3068

7590 03/16/2009

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EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
03/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/822,358	SHAJII ET AL.
	Examiner	Art Unit
	Rudy Zervigon	1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 15 December 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-11 and 21-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 and 21-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-11, and 21-30 are rejected under 35 U.S.C. 102(e) as anticipated by Wilmer; Michael E. (US 5865205 A) in view of Ohmi; Tadahiro et al. (US 6193212 B1). Wilmer teaches a system (300, 301; Figure 3A,B; column 6; lines 5-21) for delivering a desired mass of gas ("initial mass" column 6; lines 5-21), comprising: a chamber (350; Figure 3A,B; column 6; lines 5-21); a first valve (352; Figure 3A,B; column 6; lines 5-21) controlling gas ("initial mass" column 6; lines 5-21) flow into the chamber (350; Figure 3A,B; column 6; lines 5-21); a second valve (354; Figure 1; column 6; lines 5-21) controlling gas ("initial mass" column 6; lines 5-21) flow out of the chamber (350; Figure 3A,B; column 6; lines 5-21); a pressure transducer (316; Figure 3A,B; column 6; lines 5-21) providing measurements of pressure within the chamber (350; Figure 3A,B; column 6; lines 5-21); an input device (301; Figure 3A,B; column 4; line 66) for providing a desired mass of gas ("initial mass" column 6; lines 5-21) to be delivered from the system (300, 301; Figure 3A,B; column 6; lines 5-21); a controller (301; Figure 3A,B; column 4; line 66) connected to the valves (352, 354; Figure 1; column 6; lines 5-21), the pressure transducer (316; Figure 3A,B; column 6; lines 5-21) and the input device (301; Figure 3A,B; column 4; line 66) and programmed to, receive the desired mass of gas ("initial mass" column 6; lines 5-21) through the input device (301; Figure 3A,B; column 4; line 66), close the second valve (354; Figure 1; column 6; lines 5-21); open the first valve (352; Figure 3A,B; column 6; lines 5-21); receive chamber (350; Figure 3A,B; column 6; lines 5-21) pressure measurements

from the pressure transducer (316; Figure 3A,B; column 6; lines 5-21); close the first valve when pressure within the chamber (350; Figure 3A,B; column 6; lines 5-21) reaches a predetermined (calculated via "gas equation of state"; column 6; lines 20-21) level; wait a predetermined (calculated via "gas equation of state"; column 6; lines 20-21) waiting period to allow the gas ("initial mass" column 6; lines 5-21) inside the chamber (350; Figure 3A,B; column 6; lines 5-21) to approach a state of equilibrium; open the second valve at time=t_0; and close the second valve at time=t* when the mass of gas ("initial mass" column 6; lines 5-21) discharged equals the desired mass, – claim 1

Wilmer further teaches:

i. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, wherein the mass discharged ("gas equation of state"; column 6; lines 20-21) .DELTA.m is equal to, .DELTA.m=m(t_0)-m(t*)=V/R[(P(t_0)/T(t_0))-(P(t*)/T(- t*))] (5) wherein m(t_0) is the mass of the gas ("initial mass" column 6; lines 5-21) in the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t_0, m(t*) is the mass of the gas ("initial mass" column 6; lines 5-21) in the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t*, V is the volume of the delivery chamber (350; Figure 3A,B; column 6; lines 5-21), R is equal to the universal gas ("initial mass" column 6; lines 5-21) constant (8.3145 J/mol K), P(t_0) is the pressure in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t_0, P(t*) is the pressure in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t*, T(t_0) is the temperature in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t_0, T(t*) is the temperature in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time=t*, as claimed by claim 2

ii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 2, further comprising a temperature probe (314; Figure 3A,B; column 6; lines 5-21) secured to the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) and connected to the controller (301; Figure 3A,B; column 4; line 66), wherein the temperature probe (314; Figure 3A,B; column 6; lines 5-21) directly provides $T(t_0)$ and $T(t^*)$ to the controller (301; Figure 3A,B; column 4; line 66), as claimed by claim 3

iii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 3, further comprising a temperature probe (314; Figure 3A,B; column 6; lines 5-21) secured to the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) and connected to the controller (301; Figure 3A,B; column 4; line 66) and wherein $T(t_0)$ and $T(t^*)$ are calculated ("gas equation of state"; column 6; lines 20-21) using: dT/dt=(.rho..sub.STP/.rho.V)Q.sub.out(.gamma.-1)T+(Nu.kappa./l)(A.sub.w/V-sub.v.rho.) .sub.w-T) (3) where .rho..sub.STP is the gas ("initial mass" column 6; lines 5-21) density under standard temperature and pressure (STP) conditions, .rho. equals the density of the gas ("initial mass" column 6; lines 5-21), V is the volume of the chamber (350; Figure 3A,B; column 6; lines 5-21), Q.sub.out is the gas ("initial mass" column 6; lines 5-21) flow out of the delivery chamber (350; Figure 3A,B; column 6; lines 5-21), T equals absolute temperature, .gamma. is the ratio of specific heats, Nu is Nusslets number, .kappa. is the thermal conductivity of the gas ("initial mass" column 6; lines 5-21), C.sub.v is the specific heat of the gas ("initial mass" column 6; lines 5-21) under constant volume, l is the characteristic length of the delivery chamber (350; Figure 3A,B; column 6; lines 5-21), and T.sub.w is the temperature of the wall of the chamber (350;

Figure 3A,B; column 6; lines 5-21) as provided by the temperature probe (314; Figure 3A,B; column 6; lines 5-21), as claimed by claim 4

iv. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 4, wherein the gas ("initial mass" column 6; lines 5-21) flow out of the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) is calculated ("gas equation of state"; column 6; lines 20-21) using: Q.sub.out=-(V/.rho..sub.STP)[(1/RT)(d.rho./d- t)-(P/RT.sup.2)(dT/dt)] (4), as claimed by claim 5

v. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, wherein the predetermined (calculated via "gas equation of state"; column 6; lines 20-21) level of pressure is provided through the input device (301; Figure 3A,B; column 4; line 66), as claimed by claim 6

vi. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, wherein the predetermined (calculated via "gas equation of state"; column 6; lines 20-21) waiting period is provided through the input device (301; Figure 3A,B; column 4; line 66), as claimed by claim 7

vii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, further comprising an output device (301; Figure 3A,B; column 4; line 66) connected to the controller (301; Figure 3A,B; column 4; line 66) and the controller (301; Figure 3A,B; column 4; line 66) is programmed to provide the mass of gas ("initial mass" column 6; lines 5-21) discharged to the output device (301; Figure 3A,B; column 4; line 66), as claimed by claim 8

viii. a system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, wherein the chamber (350; Figure 3A,B; column 6; lines 5-21) is a delivery chamber (350; Figure 3A,B; column 6; lines 5-21) further comprising a process chamber (366; Figure 3A,B; column 6; lines 5-21) connected to the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) through the second valve (354; Figure 1; column 6; lines 5-21), as claimed by claim 9

ix. A system (300, 301; Figure 3A,B; column 6; lines 5-21) for delivering a desired quantity of mass of gas ("initial mass" column 6; lines 5-21), comprising: a chamber (350; Figure 3A,B; column 6; lines 5-21) including an inlet (inlet to 350; Figure 3A,B; column 6; lines 5-21) and outlet (outlet from 350; Figure 3A,B; column 6; lines 5-21); an inlet valve (352; Figure 3A,B; column 6; lines 5-21), connected to the inlet (inlet to 350; Figure 3A,B; column 6; lines 5-21), configured and arranged so as to control the flow of gas ("initial mass" column 6; lines 5-21) into the chamber (350; Figure 3A,B; column 6; lines 5-21) through the inlet (inlet to 350; Figure 3A,B; column 6; lines 5-21); an outlet valve (354; Figure 1; column 6; lines 5-21), connected to the outlet (outlet from 350; Figure 3A,B; column 6; lines 5-21), configured and arranged so as to control the flow of gas ("initial mass" column 6; lines 5-21) from the chamber (350; Figure 3A,B; column 6; lines 5-21) through the outlet (outlet from 350; Figure 3A,B; column 6; lines 5-21); and a controller (301; Figure 3A,B; column 4; line 66) configured and arranged to control the inlet and outlet valves (352, 354; Figure 1; column 6; lines 5-21) so that (a) gas ("initial mass" column 6; lines 5-21) can flow into the chamber (350; Figure 3A,B; column 6; lines 5-21) until the pressure (320; Figure 3A,B; column 6; lines 5-21)within the chamber

(350; Figure 3A,B; column 6; lines 5-21) reaches a predetermined (calculated via "gas equation of state"; column 6; lines 20-21) level, b) the pressure (320; Figure 3A,B; column 6; lines 5-21) of gas ("initial mass" column 6; lines 5-21) within the chamber (350; Figure 3A,B; column 6; lines 5-21) can reach a state of equilibrilum, and c) a controlled amount of mass of the gas ("initial mass" column 6; lines 5-21) can then be measured and allowed to flow from the chamber (350; Figure 3A,B; column 6; lines 5-21) as a function of a setpoint (column 7; lines 20-43) corresponding to a desired mass , and the temperature (318; Figure 3A,B; column 6; lines 5-21) and pressure (320; Figure 3A,B; column 6; lines 5-21) in the chamber (350; Figure 3A,B; column 6; lines 5-21), as claimed by claim 21

x. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 21, further including a pressure sensor (316; Figure 3A,B; column 6; lines 5-21) constructed and arranged so as to provide a pressure (320; Figure 3A,B; column 6; lines 5-21) measurement signal to the controller (301; Figure 3A,B; column 4; line 66) as a function of the pressure (320; Figure 3A,B; column 6; lines 5-21)within the chamber (350; Figure 3A,B; column 6; lines 5-21), and a temperature sensor (318; Figure 3A,B; column 6; lines 5-21) constructed and arranged so as to provide a temperature (318; Figure 3A,B; column 6; lines 5-21) measurement signal to the controller (301; Figure 3A,B; column 4; line 66) as a function of the temperature (318; Figure 3A,B; column 6; lines 5-21) within the chamber (350; Figure 3A,B; column 6; lines 5-21), as claimed by claim 22

xi. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 21, wherein the amount of mass of gas ("initial mass" column 6; lines 5-21) flowing from the

chamber (350; Figure 3A,B; column 6; lines 5-21), delta m at time t*, is determined by the controller (301; Figure 3A,B; column 4; line 66) as follows: (calculated via "gas equation of state"; column 6; lines 20-21), wherein m(t*) is the mass of the gas ("initial mass" column 6; lines 5-21) in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time = to when the gas ("initial mass" column 6; lines 5-21) within the chamber (350; Figure 3A,B; column 6; lines 5-21) is at a state of equillibrium, m(t*) is the mass of the gas ("initial mass" column 6; lines 5-21) in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time = t*, V is the volume of the chamber (350; Figure 3A,B; column 6; lines 5-21), R is equal to the ideal gas ("initial mass" column 6; lines 5-21) constant, P(to) is the pressure (320; Figure 3A,B; column 6; lines 5-21)in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time = to, P(t*) is the pressure (320; Figure 3A,B; column 6; lines 5-21)in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time = t*, T(to) is the temperature (318; Figure 3A,B; column 6; lines 5-21) in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time = to, T(t*) is the temperature (318; Figure 3A,B; column 6; lines 5-21) in the chamber (350; Figure 3A,B; column 6; lines 5-21) at time t*, as claimed by claim 23

xii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 21, wherein the controller (301; Figure 3A,B; column 4; line 66) is further configured and arranged to control operation of the inlet valve (352; Figure 3A,B; column 6; lines 5-21) by control commands (column 6), as claimed by claim 24

xiii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 21, wherein the chamber (350; Figure 3A,B; column 6; lines 5-21) includes a chamber wall (350;

Figure 3A,B; column 6; lines 5-21), and further comprising a temperature sensor (318; Figure 3A,B; column 6; lines 5-21) configured and arranged to sense a temperature (318; Figure 3A,B; column 6; lines 5-21) of the chamber wall (350; Figure 3A,B; column 6; lines 5-21) Tw, and produce a corresponding temperature (318; Figure 3A,B; column 6; lines 5-21) signal, and wherein T(to) and T(t*) are the measured temperaues of the chamber wall (350; Figure 3A,B; column 6; lines 5-21) at times to and t*, respectively, as claimed by claim 25

xiv. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 21, wherein the chamber (350; Figure 3A,B; column 6; lines 5-21) is a delivery chamber (350; Figure 3A,B; column 6; lines 5-21), and further comprising a process chamber (366; Figure 3A,B; column 6; lines 5-21) connected to the delivery chamber (350; Figure 3A,B; column 6; lines 5-21) through the outlet valve (354; Figure 1; column 6; lines 5-21), as claimed by claim 30

Wilmer is not specific in teaching the operation of his valves (352, 354; Figure 1; column 6; lines 5-21) with respect to the computer logic and processing claimed in claims 1-8, and 21-29:

i. wherein t* is from about 100millisecond to about 500milliseconds – claim 1

ii. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 1, wherein the pressure transducer (316; Figure 3A,B; column 6; lines 5-21) has a response time of about 1 to 5 milliseconds ([0114]), as claimed by claim 10

iii. wherein for delivery of the mass of gas, the outlet valve is open for a time of about 100 milliseconds to about 500 milliseconds – claim 21

iv. Wilmer does not teach that his second valve (354; Figure 1; column 6; lines 5-21) has a response time of about 1 to 5 milliseconds.

v. A system (300, 301; Figure 3A,B; column 6; lines 5-21) according to claim 25, wherein the first valve (352; Figure 3A,B; column 6; lines 5-21) is configured and arranged so that a controlled amount of mass of the gas ("initial mass" column 6; lines 5-21) can be allowed to flow from the chamber (350; Figure 3A,B; column 6; lines 5-21) as a function time derivative of the temperature (318; Figure 3A,B; column 6; lines 5-21) (calculated via "gas equation of state"; column 6; lines 20-21), as claimed by claim 26

Ohmi teaches a fluid delivery valve (300, 301; Figure 3A,B; column 6; lines 5-21) with a response time of "a few milliseonds" (column 3; lines 24-33; Table 1). As a result, operation at the claimed 100 to 500 milliseconds is inherent in Ohmi's fluid delivery valve (300, 301; Figure 3A,B; column 6; lines 5-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Wilmer's second valve (354; Figure 1; column 6; lines 5-21) with Ohmi's fluid delivery valve.

Motivation to replace Wilmer's second valve (354; Figure 1; column 6; lines 5-21) with Ohmi's fluid delivery valve is for preventing counter flow as taught by Ohmi (column 2; lines 48-61).

Response to Arguments

3. Applicant's arguments filed December 15, 2008 have been fully considered and are not persuasive.

4. Applicant states:

"

Wilmer is cited as the primary reference for the rejection. The system of Wilmer operates by comparing gas quantities in a reservoir before and after gas delivery to determine the mass delivered. In this regard, Wilmer is similar to Nawata's pulse shot regulator and pulse shot regulating method and does not teach or suggest Applicant's claimed techniques (systems and methods) for calculating actual mass delivered in real time when an output valve is opened and delivering gaseous mass and then causing the valve to close when the actual mass delivered reaches a desired amount.

"

And..

"

The system and method of Wilmer fill a gas reservoir with gas, measures the temperature and pressure of the gas in the reservoir to determine the initial amount in the reservoir. After this, an outlet valve is opened, releasing gas through a variable flow valve and a sonic nozzle. See, e.g., Wilmer, col. 3, lines 1-10. The flow of gas is then stopped and again the system measures the temperature and pressure of the gas in the reservoir to determine the final amount in the reservoir. See, e.g., Wilmer, col. 3, lines In this regard, the system of Wilmer is similar to Nawata's pulse shot regulator and pulse shot regulating method

"

In response, the Examiner notes that Applicant's citation in Wilmer of column 3 is abbreviated. Continuing after line 10, Wilmer states:

"

When the flow of gas to the process chamber is terminated, *the temperature and pressure of the gas residing in the reservoir is again measured* to determine the final mass of gas residing in the reservoir. The initial mass and final mass of gas values are compared to determine the actual mass of gas released from the reservoir during the recipe step.

" (column 3; lines 18-28)

As a result, Wilmer's *multiple* temperature and pressure measurements indeed teaches a psudocontinuous calculation of actual mass delivered in real time. According to column 3, Wilmer thus offers two data points over an unspecified period of time. Although not claimed, Applicant's "real time" operations are a subset of Wilmer's linear data collection.

Applicant further states:

"

Importantly, if the mass in the gas flow delivered by the Wilmer system is insufficient for required purposes, the only recourse is to correct the error by a subsequent delivery process as the Wilmer system (like that of Nawata) does not measure actual mass delivered by the system when the outlet valve is in an open condition.

"

In response, the Examiner has acknowledged that Wilmer is not specific in teaching the operation of his valves (352, 354; Figure 1; column 6; lines 5-21) with respect to the computer logic and processing claimed in claims 1-8, and 21-29.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner’s supervisor, Parviz Hassanzadeh, at (571) 272-1435.

/Rudy Zervigon/

Primary Examiner, Art Unit 1792